

Modeling Earth's Atmosphere Layers

1. Start with a large piece of paper.
2. **Draw the Earth.** Use a writing utensil to trace an Earth at the bottom of the paper. Color the Earth blue and green to represent the continents and oceans.
3. Draw the **troposphere**, which is the first layer of the atmosphere. The troposphere extends 16 km above Earth.
 - a. Use the scale 1mm = 1 km. Put a series of dots around Earth, 16 mm from the Earth's surface.
 - b. Connect the dots and label it. Color it yellow. Draw pictures to represent the following: airplanes, people, weather occurrences and bad ozone.
4. Draw the **stratosphere**, which is the second layer of the atmosphere. It extends 16 km – 50 km above the Earth's surface.
 - a. Measure and draw a circle 50 mm from the **Earth's surface**.
 - b. Connect the dots and label it. Color it orange.
 - c. Draw pictures to represent the following: jet streams, which are fast moving currents of air between the 2 layers. Has ozone layer, ultraviolet radiation.
5. Draw the **mesosphere**, which extends 50 km – 90 km from the Earth's surface.
 - a. Measure and draw a circle 90 mm from the Earth's surface.
 - b. Label the layer and color it red.
 - c. Draw pictures to represent the following: coldest layer, radio waves reflected to Earth, burning meteors.
6. Label the **ozone**. The ozone is not a main layer of the atmosphere but plays an important role in how it works.
 - a. Is between the stratosphere and mesosphere. Its symbol is O₃ because it is made of 3 oxygen atoms.
 - b. Color a thin, blue line to represent the ozone. Make a small section of the line dotted (----) to represent the "hole" in the ozone layer.
7. Draw the **thermosphere**. This is the 4th layer. It extends 90 km – 300 km from the Earth's surface.
 - a. Draw, label, and color green.
 - b. Draw pictures to represent the following: very hot, light "show" called auroras.
8. Draw the **exosphere**. It extends 300 km – 600 km.
 - a. Color this gray and label.
 - b. When meteoroids enter Earth's atmosphere, they enter through the thermosphere, which is extremely hot. Because of the heat, most meteoroid burn up. Draw and label a meteor entering Earth's atmosphere.

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Grading Rubric

Category	Well Done (20 points)	Meets Expectations (15 points)	Needs Work (10 points)	Area of Concern (5 points)
Measurement	All layers are accurately measured.	Three or more layers have accurate measurement.	Two of the layers have accurate measurement.	One or less of the layers are accurately measured.
Color Coding	All layers are color coded correctly.	Three or more layers are color coded correctly.	Two of the layers are color coded correctly.	One or less of the layers are color coded correctly.
Labels	All layers are correctly labeled.	Five layers are correctly labeled.	Three layers are correctly labeled.	Two or less layers are correctly labeled.
Symbols	All symbols or drawings are accurately placed.	Five symbols or drawings are accurately placed.	Three symbols or drawings are accurately placed.	Two or less symbols or drawings are accurately placed.
Neatness	The drawing is neat. There are no eraser marks or redrawn lines visible. The student name is on the back.	The drawing is neat. There are a few eraser marks or redrawn lines. Student's name is on the back.	There is visible evidence of several mistakes. The paper is wrinkled and or ripped. Student's name is not on back or is missing.	The drawing looks like it has been in your backpack for a month. There is visible evidence of many mistakes. Student's name is missing or not on back.

(attachment 4)